PHYSIOLOGICAL SUPPORT TRAINING PLAN

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In order to meet the needs set forth at the meeting held at WSPO on November 5 and 6, 1964, where the requirements for a Physiological Support Training Plan were discussed, the following material is submitted for evaluation.

A Training Plan is included, which details the material to be taught, the equipment necessary for this instruction and the methods to be used.

It is anticipated that the Training Program will commence approximately July 15, 1965 and continue through December, 1965. During that time, a full daily working schedule will be maintained.

The average number of students on a full-time basis is expected to be approximately ten (10); however, there will be numerous situations where larger groups (up to forty) will receive instruction on phases pertinent to their areas of work.

To accomplish this program, certain facilities are necessary. A classroom with an area of 25 x 40 ft. would accommodate the anticipated number of students and the equipment. It is assumed that such items as furniture, chalkboard, easel and projection equipment will be made available.

A number of instructional aids are listed in the text of the Training Plan which have been carefully selected to provide the most effective method of information presentation. Among these, is a mock-up of the aircraft cockpit. This item was first considered for use as a training device for personal equipment, however additional uses, such as aircraft oxygen system training, can already be foreseen.

The film requirements have been kept to a minimum, and are requested only in cases where effective teaching might be hampered because of the size of the group, or in cases where the use of manpower, equipment or location precludes repetition of a lesson by any means other than film.

It should be noted that each phase of instruction calls for the following items: instruction sheets, information sheets, term glossaries and schematics. It is the intent that 8-1/2 x 11 sheets of these items, printed on serviceable paper, be distributed to each student during the various lessons. A binder will be furnished, and when the course is completed each student will have his own manual of information that can be used for future reference in connection with his daily work assignments.

COURSE OUTLINE

LESSON I - Complete Review of Entire System

Ground Personnel

Flight Personnel

Objectives:

1. To describe the system generally
2. To give a brief history of how it arrived at its present state
3. To show how it functions
4. To show inter-relationships between components.

LESSON II - Aircraft Oxygen System

(From LOX Storage to Seat Disconnect)

Ground Personnel

Objectives:

1. To give a brief review of LOX
2. To teach individual component theory and operation
3. To teach individual component maintenance and adjustment
4. To practice disassembly and overhaul

LESSON III - Suit Hardware System
(From Seat Disconnect to Helmet Regulator)

Ground Personnel

Objectives:

1. To describe sequence of function for individual components
2. To teach individual component maintenance and adjustment (including trouble shooting)
3. To teach disassembly and overhaul

LESSON IV - Seat Kit and Parachute

Ground Personnel

Objectives:

1. To give a brief history
2. To teach nomenclature and identify components
3. To show function
4. To teach maintenance and adjustment
5. To practice disassembly and overhaul
6. To demonstrate hook-up and adjustment procedures (pilot handling technique)

LESSON V - Parachute Rigging Procedures

Ground Personnel

Objectives:

1. To demonstrate parachute rigging procedures
2. To teach inspection procedures
3. To practice rigging procedures

LESSON VI - A.G.E. (Ground Support & Test Equipment)

Ground Personnel

Objectives:

1. To establish usage
2. To teach operation
3. To demonstrate use
4. To teach maintenance and overhaul

LESSON VII- Emergency Pilot Removal (Suited)

Rescue Personnel

Objectives:

1. To teach sequence of operation for pilot removal
2. To demonstrate pilot removal

LESSON VIII - Indoctrination and Familiarization
(In addition to Lesson I)

Flight Personnel

Objectives:

1. To familiarize students with function and operation of oxygen and vent controls

LESSON IX - Indoctrination and Familiarization
(In addition to Lesson I)

Flight Personnel

Objectives:

1. To familiarize students with actuation of parachute and seat kit operation

LESSON X - Egress Procedures

Flight Personnel

Objectives:

1. To teach self egress procedure
2. To teach self egress procedure (emergency)
3. To teach self egress procedure (water)

Ground Personnel
Flight Personnel

PHASE I

Title of Lesson — Lesson No. 1

LESSON OBJECTIVES:

1. To describe the system, generally.
2. To give a brief history of how it arrived at its present state.
3. To show how it functions.
4. To show inter-relationships between components.

TOOLS-EQUIPMENT-SUPPLIES:

Easel
Chalkboard

VISUAL AIDS-REFERENCES:

Display boards of system.
Information sheet on specifications and performance
Glossary of terms and nomenclature.

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Discuss dual concept. 2. Describe early gas system. 3. Point out advantages of LOX System. 4. Point out differences of full and partial pressure systems. 5. Point out features of parachute and survival kit.	Lecture

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Identify all components of system and describe their function. 2. Trace flow of gas through each portion of system and indicate what takes place. 3.. Trace mechanical function of parachute and survival kit and indicate what takes place. 4. Summarize	Lecture using display boards. Distribute information sheets.

JOB OR CLASS ASSIGNMENT:

Suggest familiarization with terms and nomenclature.

CHECKING POINTS:

Question and answer period.
Written quiz for ground personnel to check individual progress

Title of Lesson: Aircraft Oxygen System (From LOX Storage to Seat Disconnect)

Lesson No. 2

LESSON OBJECTIVES:

1. To give brief review of LOX.
2. To teach individual component theory and operation.
3. To teach individual component maintenance and adjustment.
4. To practice disassembly and overhaul.

TOOLS-EQUIPMENT-SUPPLIES:

Hand tools for disassembly
Work Tables
Easel
Necessary Test Equipment

VISUAL AIDS-REFERENCES:

Schematic Drawings of Components
List of Troubleshooting Hints
Pre-flight, Post-flight, Periodic Inspection Forms
Safety Rules/Training Components

INTRODUCTION:

TEACHING POINTS:

1. Discuss LOX handling methods.
2. Emphasize safety procedures
3. Discuss component theory and operation.

METHODS:

Pass out safety rules
Lecture
Use Schematics

PRESENTATION:

TEACHING POINTS:

1. Point out pre-flight inspection procedures
2. Explain inspection forms
3. Demonstrate testing
4. Demonstrate adjustment
5. Repeat 1 through 4 for post-flight inspection
6. Repeat 1 through 4 for periodic inspection
7. Demonstrate disassembly
8. Point out parts replacement procedure for repairs
9. Give troubleshooting hints
10. Demonstrate assembly
11. Summarize

METHODS:

Lecture using schematics
Distribute inspection forms
Disassembly and assembly training components.

JOB OR CLASS ASSIGNMENT:

Have students practice testing and adjustment.
Have students practice disassembly and assembly procedures.

CHECKING POINTS:

Have various students find and correct programmed defects or malfunctions.

Give writ

Title of Lesson: Suit Hardware (Seat Disconnect to Helmet Regulator) — Lesson No. 3

LESSON OBJECTIVES:

1. To describe sequence of function for individual components
2. To teach individual component maintenance and adjustment (including troubleshooting).
3. To teach disassembly & overhaul.

TOOLS-EQUIPMENT-SUPPLIES:

Work Tables
Chalkboard
Hand Tools
Necessary Test Equipment

VISUAL AIDS-REFERENCES:

Schematics
Functional Display Board on suit hardware components
Inspection Forms/Safety Rules
Troubleshooting procedures list/ training component

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Give brief review of suit concept 2. Show how hardware is integrated into suit and helmet 3. Show how each component operates and the relationship of components	Lecture using functional board Distribute Safety Rules

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Point out pre-flight inspection procedures 2. Explain inspection forms 3. Demonstrate testing 4. Demonstrate adjustment 5. Repeat 1 through 4 for post-flight inspection 6. Repeat 1 through 4 for periodic inspection 7. Demonstrate disassembly 8. Point out parts replacement procedure 9. Give troubleshooting hints 10. Demonstrate assembly 11. Summarize	Distribute instructional material Use schematics for procedures Assembly and Disassembly Training components

JOB OR CLASS ASSIGNMENT:

Have students practice testing and adjustment
Have students practice disassembly and assembly procedures

CHECKING POINTS:

Have various students find and correct programmed defects or malfunctions

Title of Lesson Seat and Parachute — Lesson No. 4

LESSON OBJECTIVES:

1. To give a brief history
2. To teach nomenclature and identify components
3. To show function
4. To teach maintenance and adjustment
5. To practice disassembly and overhaul
6. To demonstrate hook-up and adjustment procedures (pilot handling technique

TOOLS-EQUIPMENT-SUPPLIES:

Hand Tools for disassembly
Work Tables
Easel
Appropriate Test Equipment
Projection Equipment

VISUAL AIDS-REFERENCES:

Flip Charts - Blow-up Drawings
Information sheets on specifications and performance
16mm film (15-min. length)/training comp.; glossary of terms and nomenclature.

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Discuss evolution of system 2. Point out advantages of system over earlier system 3. Stress attention to quality of workmanship and detail	Lecture using flip charts Distribute information sheets

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Identify all components of system and trace mechanical function 2. Show hook-up and adjustment procedures 3. Point out pre-flight inspection procedures 4. Demonstrate testing 5. Demonstrate adjustment 6. Repeat 3 through 5 for post-flight inspection 7. Repeat 3 through 5 for periodic inspection 8. Demonstrate disassembly 9. Give parts replacement procedures for repair 10. Demonstrate assembly 11. Summarize	Lecture using drawings Show film on hook-up Distribute inspection forms

JOB OR CLASS ASSIGNMENT:

Have students demonstrate and practice procedures taught

CHECKING POINTS:

Have checklist for hook-up procedures and
Evaluate each student individually

Title of Lesson Parachute Rigging Procedures — Lesson No. 5

LESSON OBJECTIVES:

1. To demonstrate parachute rigging procedures
2. To teach inspection procedures
3. To practice rigging procedures

TOOLS-EQUIPMENT-SUPPLIES:

Rigging Tables
Rigging Kits
Projection Equipment

VISUAL AIDS-REFERENCES:

Training Parachute
Film on Parachute Rigging
Checklist
Templates of ideal pack size

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Discuss type of parachute 2. Describe method of unpacking 3. Describe method of packing 4. Explain checklist	Show Film and Lecture Distribute Checklist

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Name and show use of rigging tools and equipment 2. Demonstrate correct unpacking procedure 3. Discuss nomenclature of parachute and pack 4. Demonstrate correct repacking and procedure 5. Summarize	Demonstrate and lecture Practice Rigging Practice Inspection and use of checklist

JOB OR CLASS ASSIGNMENT:

Have each student pack parachute under supervision

CHECKING POINTS:

Use pack size template and checklist to grade work

Title of Lesson A.G.E. Lesson No. 6

LESSON OBJECTIVES:

1. To establish usage
2. To teach operation
3. To demonstrate use
4. To teach maintenance and overhaul of A.G.E.

TOOLS-EQUIPMENT-SUPPLIES:	VISUAL AIDS-REFERENCES:
Hand Tools Work Tables Primary Standards for Calibration Chalkboard	Schematics of Equipment Calibration Charts; conversion charts Test Equipment Altitude-Pressure Tables

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Point out necessity for maintaining A.G.E.	Lecture using schematics
2. Provide theory of operation	Pass out charts
3. Describe articles of A.G.E. in use	

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Stress cleanliness of equipment	Lecture
2. Establish regulator maintenance and calibration procedure	Lecture using test equipment
3. Demonstrate correct manner of read-out on gages, meters, etc.	
4. Demonstrate actual use of equipment	
5. Teach repair procedures	

JOB OR CLASS ASSIGNMENT:

Give written assignment on use of charts and tables

CHECKING POINTS:

Give written quiz
Have students demonstrate use of equipment

Title of Lesson Emergency Pilot Removal (Suited) Lesson No. 7

LESSON OBJECTIVES:

1. To teach sequence of operation for pilot removal
2. To demonstrate pilot removal

TOOLS-EQUIPMENT-SUPPLIES:	VISUAL AIDS-REFERENCES:
Suit, parachute, seat kit, cushion Stop Watch	Wood mock-up of cockpit area Checklist Drawing indicating disconnect points

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Establish procedure - consider team operation 2. Establish timing - strive for achievement in shortest time 3. Stress check of pilot condition before removal attempt	Use drawings to familiarize with disconnect points Lecture

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Stress - First install "O" Ring Pin 2. Teach checklist 3. Point out disconnect points 4. Point out procedures to use with sufficient time 5. Point out procedures in emergency 6. Summarize	Use mock-up and checklist for demonstration and individual performance

JOB OR CLASS ASSIGNMENT:

Practice

CHECKING POINTS:

Individual evaluation of performance by instructor

Title of Lesson: Indoctrination and Familiarization (In addition to Phase I) — Lesson No. 8

LESSON OBJECTIVES:

1. To familiarize students with function and operation of oxygen and vent controls.

TOOLS-EQUIPMENT-SUPPLIES:

Complete Suit
Strip Projector

VISUAL AIDS-REFERENCES:

Cockpit Mock-up
Film Strips of individual controls
Instruction sheets

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Describe controls and their function	Lecture using film strips
2. Describe reactions that should be expected	Distribute instruction sheets

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Establish location and demonstrate usage of seat disconnect and vent disconnect 2. Locate and demonstrate vent flow control 3. Locate and demonstrate suit controller Press-to-test	Lecture using cockpit mock-up

JOB OR CLASS ASSIGNMENT:

CHECKING POINTS:

General question and answer period

Title of Lesson: Indoctrination and familiarization (In addition to Phase I)

Lesson No. 9

LESSON OBJECTIVES:

To familiarize students with actuation of parachute and seat kit operation.

TOOLS-EQUIPMENT-SUPPLIES:

Complete Suit
Parachute
Seat Kit
Strip Projector
Easel

VISUAL AIDS-REFERENCES:

Flip Charts
Film Strips
Instruction Sheet
Cockpit Mock-up

INTRODUCTION:

TEACHING POINTS:

1. Describe actuating devices and their function
2. Describe reactions that should be expected

METHODS:

Lecture using film strips and Flip Charts

PRESENTATION:

TEACHING POINTS:

Locate and Demonstrate usage of following personal equipment items:

Green apple and gages
Kidney pad bulb
Actuator arming knob w/lap
Belt lanyard
Manual ripcord handle
O_2 hoses and disconnect
Lap belt manual release
Canopy release
Harness release

METHODS:

Lecture using hardware and cockpit mock-up

JOB OR CLASS ASSIGNMENT:

CHECKING POINTS:

General question and answer period

Title of Lesson Egress Procedures — Lesson No. 10

LESSON OBJECTIVES:

1. To teach self egress procedure
2. To teach self egress procedure (emergency)
3. To teach self egress procedure (water)

TOOLS-EQUIPMENT-SUPPLIES:

Personal equipment
Projector

VISUAL AIDS-REFERENCES:

Cockpit Mock-up
Checklist
Film on water egress

INTRODUCTION:

TEACHING POINTS:	METHODS:
1. Stress fact that "0" Ring Pin must be installed first 2. Show sequence of operation for each type of condition	Show film Lecture Distribute Checklist

PRESENTATION:

TEACHING POINTS:	METHODS:
1. Demonstrate normal self egress procedure leaving parachute and seat in aircraft	Use Cockpit Mock-up
2. Same as (1) except take all gear	Use Swimming Pool
3. Indicate what to cut in emergency	
4. Discuss various conditions with aircraft in water	
5. Demonstrate procedure for chute landing in water	

JOB OR CLASS ASSIGNMENT:

Learn Checklist
Practice Procedures

CHECKING POINTS:

Individual evaluation of performance by instructor